We Claim:

1. A method for detecting and identifying a toxin in a sample, the method comprises: providing an array having a plurality of biological membranes associated with a surface of a substrate; contacting the array with a solution having a target compound; monitoring for binding activity of at least one biological membrane with said target compound.

2. The method according to claim 1, wherein said biological membranes contain a toxin-binding moiety.

3. The method according to claim 2, wherein said toxin-binding moiety is a cell-surface protein.

4. The method according to claim 2, wherein said-toxin binding moiety is a carbohydrate.

5. The method according to claim 4, wherein said carbohydrate moiety is a ganglioside.

6. The method according to claim 2, wherein the toxin-binding moiety is a natural lipid, a synthetic lipid, or a lipid composition containing a toxin-binding receptor, or a purified receptor.

7. The method according to claim 6, wherein said toxin-binding moiety is an ion channel.

8. The method according to claim 8, wherein the toxin-binding receptor is a sodium channel, a potassium channel, a calcium channel, and any combination of ion channels, an acetylcholine receptor, a ryanodine receptor, a glutamate receptor, a ceramide, a ganglioside, a cerebroside, sulfatides or cholesterol.

9. The method according to claim 1, wherein said biological membranes are arranged in distinct microspots.

10. The method according to claim 1, wherein said target compound has at least one constituent that is labeled.

11. The method according to claim10, wherein said monitoring step comprises detecting for the presence of the label.

12. The method according to claim 1, wherein the monitoring step comprises detecting directly a physical change due to the binding of said target compound to said biological membranes.

13. The method according to claim 1, wherein the target compound has no labeled constituent.

14. The method according to claim 1, wherein said method employs a labeled toxin or known compounds with an affinity to the toxin molecule or to the receptor site.

15. The method according to claim 1, said toxin detection sample can be a synthetic or natural toxin, or from a human, animal, plant, food, or environmental source.

16. The method of claim 1, wherein the substrate includes a glass, ceramic, metal-oxide, metal, non-metal, silicon, or polymer material.

17. The method according to claim 1, wherein said substrate is either nano- or micro-porous.

18. The method according to claim 1, wherein the substrate is configured as a bead, chip, a slide, a multiwell microplate, or a microcolumn.

19. The method according to claim 1, wherein the surface is coated with a material.

20. The method according to claim 19, wherein the material is a silane, thiol, disulfide, or a polymer.

21. The method according to claim 19, wherein when the substrate comprises a gold-coated surface, the material is a thiol or a disulfide.

22. The method according to claim 20, wherein the silane presents terminal polar moieties.

23. The method according to claim 19, wherein the terminal polar moieties are hydroxyl, carboxyl, phosphate, sulfonate, thiol, or amino groups.

24. The method according to claim 19, wherein the surface is positively charged and contains amino groups.

25. The method according to claim 19, wherein the material is γ–aminopropylsilane.

26. The method according to claim 20, wherein the polymer is poly-lysine, polyethyleneimine, or chitosan.

27. An array for identifying and detecting a toxin, the array comprising a plurality of biological membrane probes associated with a surface of a substrate; said biological membrane containing a toxin-binding moiety.

28. The array of claim 27, wherein the biological membrane contains a toxin-binding receptor.

29. The array of claim 27, wherein said biological membrane probes are arrayed as distinct microspots on said substrate surface.

30. The array of claim 28, wherein the toxin-binding receptor is a natural lipid, a synthetic lipid, a lipid composition containing toxin-binding receptor, or a purified receptor.

31. The array of claim 28, wherein the toxin-binding receptor is a sodium channel, a potassium channel, a calcium channel, an acetylcholine receptor, a ryanodine receptor, a glutamate receptor, a ceramide, a ganglioside, a cerebroside, sulfatides or cholesterol.

32. The array of claim 27, wherein the substrate includes a glass, ceramic, metal oxide, metal, non-metal, silicon, or polymer material.

33. The array of claim 27, wherein the substrate is configured as a chip, a slide or a microplate.

34. The array of claim 27, wherein the surface is coated with a material.

35. The array of claim 34, wherein the material is a silane, thiol, disulfide, or a polymer.

36. The array of claim 27, wherein when the substrate comprises a gold-coated surface, the material is a thiol or a disulfide.

37. The array of claim 35, wherein the silane presents terminal polar moieties.

38. The array of claim 37, wherein the terminal polar moieties are hydroxyl, carboxyl, phosphate, sulfonate, thiol, or amino groups.

39. The array of claim 27, wherein the surface is positively charged.

40. The array of claim 34, wherein the material is γ–aminopropylsilane.

41. The array of claim 34, wherein the polymer is poly-lysine, polyethyleneimine, or chitosan.

42. A method for detecting a binding event between a probe and target compound, said method comprising: providing an array having a plurality of biological membrane microspots associated with a surface of a substrate; contacting a solution comprising a target compound with said array of probe biological membrane microspots; and detecting a binding event between at least one or more of the probe microspots with one or more of the constituents of the target compound.

43. The method of claim 42, wherein at least one of the constituents of the target is labeled and the detection step comprises detecting the presence of the label.

44. The method of claim 42, wherein the detection of the label is carried out by imaging based on fluorescence, phosphorescence, chemiluminescence, or resonance light scattering emanating from the bound target.

45. The method of claim 42, further comprising washing the substrate of unbound target prior to the detection step.

46. The method of claim 42, wherein the array of microspots is incubated with labeled target and an unlabeled target compound, and the binding event between the unlabeled target compound and the probe is determined by measuring a decrease in the signal of the label due to competition between the labeled target and the unlabeled target compound for the probe.

47. The method of claim 42, wherein the target is unlabeled and the binding event is determined by a change in physical properties at the interface.

48. The method of claim 47, wherein the change in physical properties at the interface is a change in refractive index or electrical impedance.

49. A method for identifying and detecting a toxin in a sample, said method comprising: providing an array having a plurality of biological membrane microspots associated with a surface of a substrate; contacting a sample solution comprising an unknown toxin with said array of biological membrane microspots; and detecting the binding profile of the unknown toxin to at least one or more of the microspots.

50. The method of claim 49, wherein the sample is a biofluid from a specific infectious tissue, a solution from food or environmental sources or an aqueous solution having chemical toxins collected or concentrated from a contaminated gaseous media.